Understanding Sleep Behaviour as a Determinant of Health

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Today, a significant topic within Health Psychology is the theme of how sleep is considered an essential and modifiable determinant of health in our society (Kyle & Henry, 2017). This pertains to all aspects of sleep including sleep quality, sleep disruptions, sleep onset, wake time and the potential chronic conditions one can obtain in accordance to sleep and its characteristics. The field of Health Psychology is continually progressing with connecting behaviour to our multidimensional health in a variety of ways. Although behaviour interventions may not currently be seen as the most important field to research in, we can understand the profound impact simple behavioural technologies can have on the body (Kaplan, 2008). By continually using a Biopsychosocial model, the field of Health Psychology successfully relates our biology, behavioural attitudes and social conditions in a way of comprehending our health (2008). This can be continued into sleep behaviour and the possible effects it can have on the human body, including an increased potential disease risk. The following review will be integrating the importance of using behaviour to analyze sleep and its association with increased inflammation and chronic disease risk.

To begin this article, the importance of linking behaviours, including sleep and its characteristics, to our multidimensional health must be established. Primarily, the Biopsychosocial model allows researchers to understand the internal human body and its connections to the risk of developing chronic diseases. As of today, not all health practitioners use this approach; To prevent or overcome these diseases, we must “form better collaboration between health psychology and health care providers” (Kaplan, para. 10, 2008). We see throughout the data that Health Psychology is commonly intertwined with Behavioural Medicine to apply this knowledge practically in the real world (2008). Health practitioners from specific areas share the common goal of attaining a healthier population and should consider more collaborated care for patient’s health (2008). With these practices, this model can be utilized to associate health with behaviour to provide effective treatments for multiple chronic diseases, including those related to sleep.

 Through analyzing multiple research studies, it can confidently be stated that sleep has profound effects on numerous internal systems of the human body, largely including the Immune system and its inflammatory responses. Whether this be negative or positive, it must be addressed for practitioners and patients to understand their full multidimensional wellness. By using more psychological behaviour methods for patient assessment, health care providers can become more competent in using multidisciplinary research to treat diseases more effectively (2008). In the words of Kaplan, “the purpose of health care is to improve the health of the population” and to successfully do so we must use the validated literature Health Psychology provides to us (para. 14, 2008). Behaviour and health have always been inversely related to each other and must not be forgotten about when assessing a patient’s health and wellness, no matter what the circumstances are.

In Health Psychology, it is known that behaviour can strongly affect one’s ability to prevent and overcome chronic diseases in numerous conditions. Kaplan tells us, “that human behaviour plays a significant role in most of the leading causes of death” (para. 1, 2008), stating the significance for assessing behaviour in patient’s health. We can easily relate this to a patient’s sleeping behaviours and the impacts this may have on their wellness. How one behaves is a necessary factor in their quality of life. Unfortunately, more health damaging behaviours are seen than health promoting behaviours, leading to this upsetting chronic disease epidemic. By addressing this factor, all health practitioners have the ability to become more competent in using behaviour technologies and therapies to reduce illness and disease (2008).

We can comprehend this by using stress and its emotional responses as an example. From the literature, we know both can create significant challenges for the body to overcome. Baum and Posluszny express that “psychological processes and emotional states influence the etiology and progression of disease and contribute to overall host resistance or vulnerability to illness” (pg 139, 1999). When focusing on sleep and sleep disruptions, society is seeing an increase in stress, along with decreased sleep, leading to the possibility of Insomnia, Cardiovascular disease and Depression (Irwin, 2015). We can contribute this to the effect that disrupted sleep has on the Innate and Adaptive Immune systems. By using this information, it can instruct health practitioners to take the proper direction when assessing a patient holistically (Kaplan, 2008). One must find the health damaging behaviours contributing to stress, explain their contribution to disease risk and find a way for extensive behaviour change. Without focusing on behaviour, a physician may miss essential cues for explaining ailments in the body.

Through using behaviour as a method of assessment in health psychology, practitioners can connect behavioural actions to the onset of chronic conditions and disease risk. These illnesses can be prevented by encouraging health promoting behaviours such as physical activity, adequate nutrition habits and stress reduction techniques (Baum & Posluszny, 1999). Likewise, these illnesses can be progressed easily by excessive tobacco and alcohol use along with poor sleeping habits and high levels of stress (1999). By not taking care of the human body, stress can rise throughout and persist when unnecessary. Unfortunately, stress is an inevitable part of life and, according to Baum and Posluszny, it must be dealt with appropriately to decrease the chances of stress affecting sleep habits (1999).

Negative and prolonged stress can directly affect the body and it’s sleeping behaviours. From a Psychoneuroendoimmunology perspective, sleep stressors have the ability to decrease the body’s overall immune response to common stressors. Examples of stressors relating to sleep may include knowing the body won’t be able to fall asleep, overthinking about wake time, and feeling unrefreshed after a night of sleep. The body reacts to these stress issues with increased blood flow, decreased digestion, enhanced cardiovascular function, heightened attention and proper temperature regulation, also known as the Sympathetic, Flight or Fight Response (1999). When this occurs, several body systems are being operated, exhausting the body of its stored energy. If this sympathetic response becomes prolonged, we unfortunately begin to see an increase of disease risks from excessive use of the body’s systems. Baum and Posluszky state prolonged stress comes with “a range of consequences, including wear and tear on arteries and coronary vessels, formation of thrombi, suppression of host resistance… poorer problem-solving and task performance, disrupted social relationships, and poorer quality of life…” (pg 141, 1999). Inefficient sleep can have biological and social consequences of increasing persistent stress which has damaging effects on the body as a whole, inducing inflammation and increasing one’s risk of developing a chronic condition. Physicians are commonly seeing that when stress levels rise it is often accompanied with negative sleep disruptions in the body.

Scientists state that our Central Nervous system is directly related to our Immune system, signifying the importance of controlling these harmful stressors, like sleep disruption, to protect our immune functions, ensuring they are strong enough to fight illness in the body (1999). This information should, once again, help health practitioners increase their confidence in the effectiveness of behaviour as a method of assessment. Chronic disease is life threatening and must be understood using a variety of factors in assessment, including behaviour, social and psychological conditions (Kaplan, 2008).

Sleep is a health behaviour that is required for the body to work efficiently. It occurs in a variety of stages coinciding with a variety of benefits at each stage. Irwin (2015), exclaims that sleep is “not quantal but shows a continuous progression from wakefulness to NREM and REM sleep” over time (pg. 145). NREM sleep stands for non-rapid eye movement, which can be further separated into stages 1-4, and where slow-wave sleep can occur. REM means rapid eye movement and is where most vivid dreams occur, with brain activity increasing and voluntary muscles relaxing (Walcutt, 2018). The specifics of sleep stages can go into much further description however, for the use of this review it is unnecessary to discuss. Understanding sleep behaviour as a tool of health assessment is more important and necessary for diagnoses and healing of the body. This is because of sleeps ability to enhance or disrupt different bodily systems.

Sleeping, according to The British Journal of Health Psychology, is a “modifiable determinant of health” that plays a vital role in the quality of life and health of a patient (Kyle & Henry, pg 661, 2017). It is a time for the body to get adequate rest after a day of work, along with rest to most of the bodily systems that were striving throughout the day. Although it may not be looked at as the most important factor of health in all practitioners’ eyes, it needs to be necessarily assessed by all public health workers (2017). Sleep, has always been but, is now recognized as a public health concern and an essential component of a healthy lifestyle that tends to be overlooked by most. “A public health interventional approach will need to focus on creating conditions propitious for sleep, beyond simply targeting sleep itself” containing “environmental, lifestyle and cognitive variables” says Simon Kyle (pg. 665, 2017). The field of Health Psychology is advancing the overall knowledge of sleep and its central factors in maintaining good health. Sleep education is another key factor that must be addressed, with focus on adolescents bringing health promoting sleeping behaviours into their lifestyle for future wellness (Kyle, 2017). To add, workplaces need to cooperate on more livable shift hours to decrease the detrimental effects of sleep deprivation (2017). Various practitioners are forgetting to bring awareness to this issue, adding to the increased numbers of Insomnia, Circadian Rhythm Disorders and Depression.

Given that sleep can be seen as a modifiable determinant of public health, the etiology of its potential conditions must be understood, along with the symptoms that co-occur. Sleeping can be recognised as a “complex and nuanced sate of physiology and behaviour” that co-occurs with “…immunological, metabolic and cardiovascular health” (Kyle, pg 661, 2017). Multiple scientists have found reciprocal affects between sleep and the Immune system strength, while trying to find the underlying biological mechanisms to sleep disruption (Irwin, 2015). In Canada, we see about 10% of the population suffering from diagnosed insomnia while 20-25% of the people experience insomnia related symptoms (Canadian Sleep Society, n.d.). Each person has multiple, individual factors relating to how much sleep they need to be functional the next day, usually ranging from 7-9 hours per night (n.d.). Factors that determine sleep length needed are age, gender, occupation, and overall health status (2017). Sleep disruption has the ability to produce cognitive impairment, enhanced emotional reactivity, increased inflammation and risk of infection along with low mood, increased weight gain and insulin sensitivity (pg. 662, 2017). To add, sleep disruption can also alter glucose metabolism and appetite-regulating hormones, leading to a lower metabolic rate and increased blood pressure (pg. 662, 2017). These consequences are inversely related to an increased risk of chronic diseases including Diabetes, Cardiovascular disease and Cancer.

Unfortunately, Health Psychologists are now acknowledging how sleep disruption can potentially decrease one’s involvement in health promoting behaviours and increase their involvement in health damaging behaviours (Kyle, 2017). For example, a patient may be experiencing a stressful life event which increases the disruption of their sleep quality leading to a decrease in healthy eating and physical activity (2017). Another example could be someone experiencing poor sleep habits, leading to rising stress levels and a decrease in health promoting behaviours. This is a reciprocal relationship between behaviour conditions, social conditions and psychological conditions. This ongoing process efficiently shows how the Biopsychosocial model relates to our multidimensional health in Health Psychology (2017).

Briefly mentioned above was how the Immune system can be affected from sleep disruption, a stressor to the body. This can include reactions from the Sympathetic Nervous System and the Hypothalamic-pituitary-adrenocortical axis (HPA axis) during sleep disruption (Irwin, 2015). With this reaction, Irwin tells us how sleep loss can directly relate to an increase in inflammatory responses (2015). The body attempts to modulate this with neural and hormonal regulation (Baum & Posluszny, 1999). This is mainly due to the Sympathetic nervous system activation, bringing with it a range of inflammatory biomarkers including pro-flammatory cytokines, B-adrenergic signalling and increases in specific Natural Killer cells (NK) (2015). When this response occurs, the body releases norepinephrine, stimulating the adrenals and inflammatory processes throughout the night. The body would rather be resting, engaging in Parasympathetic responses, to rest and digest but sleep disturbances don’t let this happen. The role of sleep can be “cross-link[ed]” between the brain and the Immune systems, leaving some researchers struggling to comprehend the issue (Irwin, pg. 154, 2015). Not only is this related to a disruption of sleep but also to extreme short and long sleep duration. If one is over-sleeping the recommended range for their age, they may also see adverse health effects (2015). These concerns can range differently between genders and ages while depending on social inclusions and support (2015). Female and elderly populations may see a higher risk of inflammation from chronic sleep loss than males, due to their elevated inflammatory responses (2015). Overall, everyone is susceptible to sleep disruptions which are scientifically known to increase multiple inflammatory responses in the body, leading to an increased risk of chronic diseases and conditions susceptible to inflammation.

Several chronic diseases become present when discussing sleep as a modifiable health behaviour. The ones being focused on in this review include Cardiovascular disease, Cancer and Depression (Irwin, 2015). First, Cardiovascular disease will be discussed, signifying its relation to inflammation and sleep disruptions. With inflammation being a prominent factor of developing atherosclerosis, sleep complaints are a large predictor of developing CVD (2015). Irwin discusses, in one particular research study, those who have had insomnia “for more than a year” also “had a fivefold greater risk of having hypertension” (pg. 159, 2015). Long and short sleep duration put one at risk for cardiovascular events (2015). Not all studies have resulted in this same conclusion but have acknowledged how Hypertension can result from sleep loss and lead to an increase risk of Cardiovascular mortality (2015).

Next, is the position of Cancer and its relation to sleep disturbance. Here, we also must address the significance of inflammation on cancer onset and progression. It is known that “inflammatory responses are thought to be linked to 15–20% of all deaths from cancer worldwide” (Irwin, pg. 160, 2015). This can be seen often in shift working individuals, who have disrupting circadian rhythms, also known to have carcinogenic properties to the body (2015). This relation between sleep disturbances and cancer is continually being researched throughout countless bodies of science however, it unsure of what exactly causes these risks. It may be attributed more to short sleep than other sleep disruptions but the evidence is unclear (2015).

Finally, a Health Psychologist, who deals with patients experiencing Depression, should use sleep behaviour to assess their patient. Depression serves multiple connections to inflammatory responses and vice versa (2015). Those with an inflammatory disease have an increased risk of developing depression (2015). Insomnia and Depression can often co-occur with another, but are not symptoms of each other (2015). This prevalent co-morbidity can be used within Health Psychology to further “prevent the development of depression by targeting sleep disturbance” (Irwin, pg. 161, 2015) in behavioural assessment and treatments. With research continuing to be performed, Irwin bring awareness to the fact that “the prospective role of sleep disturbance in driving increases in inflammation that mediate the risk of depression is not known” but can provide insight for Health Practitioners (Irwin, pg. 162, 2015).

Comprehending sleep behaviour to play a major role in chronic disease risk allows for Health Psychologists to find a way to prevent and treat this issue. Practitioners will assess the patient using the Biopsychosocial model and provide insight to which therapies are necessary for healing. With chronic disease numbers elevating today, it is required to take sleep into account during assessment. Now, Health Psychologists are finding a way to use behaviour as a treatment option. This area of concern is emerging as “Behaviour Sleep Medicine”, combing Health Psychology, Behavioural Medicine and Sleep Disorders Medicine (Stepanski & Perlis, 2000). This subspecialty can be used to help provide patients with more comprehensive treatment regarding their Psychological issues. Like Kaplan said, we need multidisciplinary connections to further the success of chronic disease risk (2008). Stepanski and Perlis state this type of medicine is 1) used to identify the psychological behaviours that contribute to the development of the disorder and 2) to provide “empirically validated cognitive, behavioral, and/or other nonpharmacologic interventions for the entire spectrum of sleep disorders” (para. 2, 2000). Multiple issues pertaining to sleep disturbance psychological issues are attempted to be solved with pharmaceutical medicine while Stepanski and Perlis are taking a Behaviour-directed approach (2000). Behavioural Sleep Medicine practitioners have the ability to help others living with Insomnia, Pediatric sleep disorders, Circadian Rhythm disorders, Excessive sleepiness disorders and medical adherence to treatments (2000). They provide a variety of behavioural treatments including Cognitive Behavioral Treatment, Stimulus Control therapy and Relation Techniques such as Progressive Muscle Relaxation, Imagery and Biofeedback (2000). Using these ideas allows Health Psychologists to further their role in behavioural treatments along with the traditional therapies they feel comfortable with. Stepanski & Perlis intend to expand their vision for more research to be completed for this integrated approach of behavioural treatment (2000).

In conclusion, sleep is now considered a modifiable, basic determinant of health becoming a public health concern with regards to chronic disease and conditions risk (Kyle & Henry, 2017). Health Psychology is becoming successful in using the Biopsychosocial approach to relate sleep behaviours to multidimensional health in a variety of circumstances (Kaplan, 2008). Although, it is necessary that health practitioners begin to integrate their practices together for a more comprehensive analysis of behaviour and health (2008). With sleep behaviour having a profound impact on the Immune system, inflammation and chronic disease risk can be strongly connected. Using Behavioural assessment and treatment, such as Behavioural Sleep Medicine, is allowing Health Psychology to educate others on the importance of controlling everyday stressors. This review intended to relate the significant aspects of sleep behaviour to chronic disease risk. The evidence is clear however, it must be further researched to have a more recognized and appreciated impact on health and health care practitioners.

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